

Remarks

Acceptance/formal entry therefor of this preliminarily submitted Amendment prior to the mailing of a first Official Action on the merits is respectfully requested.

Revisions were implemented in the original Specification to remove discovered minor informalities as well as to highlight the intent of the term "modulate" or the term "modulation" such as employed on pages 22-23, paragraphs [0071] and [0072]. Supportive discussion regarding the changes implemented on pages 22-23 is found in the statement "the voltage levels of the pulses are varied over time ...," in paragraph [0071], as well as in the statement "modulation either via multiple drive voltages of pulse width variation ...," in paragraph [0072], and elsewhere in the Specification.

The amendments made to the claims are in consideration of further clarifying the invention including in a manner which highlights the patentable featured aspects thereof over prior known schemes including over that cited in "Written Opinion" in connection an International Search Report (ISR) by the ISA/US with regard to a counterpart International Application, a copy of which is attached to an accompanying Information Disclosure Statement (IDS). It is noted that the art documents cited in the ISR were previously submitted in connection with an IDS, which was filed concurrently with the application papers of the present application.

Specifically, independent claims 1 and 18 are being re-presented in *Jepson* format, with regard to highlighting that which is considered new and inventive over the inventors' earlier patent (USP 6,026,818). Moreover, the changes implemented therein further highlight the inapplicability of the cited

reference Fabian et al (USP 5,188,126) as a teaching with regard to the present application. (For the same and similar reasons, the other cited Fabian et al patent (USP 5,190,059) is also considered inapplicable.) In this regard, all of the independent claim groups including, including claims 1+, 18+ and 25+, were amended to specifically highlight that the present invention uses purely magnetic coupling for excitation and signal propagation. This is specifically noted with regard to the insertion "using magnetic coupling for effecting excitation of the tag element and for signal propagation" in both independent claims 1 and 25 as well as by the newly added expression "electromagnetic excitation" with reference to how the tag element is excited with regard to independent claim 18. As is clearly understood, an electromagnetic signal is a magnetic signal whereas capacitive coupling for effecting excitation and signal propagation, such as employed by Fabian et al, pertains to electrostatic signal coupling, in clear contradistinction with that presently called for. Example supportive discussion can be found on page 4, the last three lines in paragraph [0012], page 10, paragraphs [0036] and [0037] and on page 18, paragraph [0061], etc., which show that the tags, according to applicants original disclosure, are excited by an electromagnetic signal, which relates to magnetic coupling.

The additional amendment effected in claim 1 refers to the emitting of pulsed wideband signals via the antenna in a time-wise successive manner such as implemented with regard to the round-robin scheme (although not limited thereto) of the mutually orthogonal three-ring antenna, in which only one of the three rings 13, 14, and 15 is transmitting at any one time. With regard to this example, although not limited thereto, discussion thereof in the Specification is found beginning on page 18, paragraph [0061]. Details regarding this are further

highlighted with regard to dependent claims 10, 21-22 and 27, as currently amended.

The revisions implemented in claims 7 and 8, and, similarly elsewhere, are to remove unnecessary language and with regard to claims 9, 10 and 26, the revision implemented therein, namely, rephrasing the expression "plural ring-shaped antennas" to plural antenna rings is strictly of an editorial clarification, consistent with the language employed in the Specification. As to the replacement of words such as "modulated" to that of varying, see the above discussion with regard to similar such changes being made in the Specification.

Fabian et al taught a scheme which specifically employs capacitive coupling for its excitation and signal propagation, in clear contradistinction with that presently set forth. The term "coupling" such as used, for example, in claim 8 of the present invention, it is submitted, strictly relates to the electrical connection of the wire to the capacitor similarly to the example illustration of such a tag in Fig. 2 of the drawings.

As was explained hereinabove, and as more extensively discussed with regard to the example embodiments in the present Specification, excitation and signal propagation is effected via pulse wideband signals that emanate from the antenna of the interrogation/detector as electromagnetic signals which excite a nearby tag, the tag being typically comprised of an encased looped wire or some other variation thereof, examples of which, as well as other examples of tags, are extensively given in the present Specification. As is described by Fabian et al, the tags (or markers 20), unlike that according to applicants invention, are highly electronically sophisticated components which employ capacitive coupling with the detector 30. The communication between the interrogation/detection

member and the tag according to the present invention does not involve capacitive coupling.

Modulation is a well-known technical expression such as with respect to application thereof to the mixing of signals. For example, sinusoidal modulation is known to enable high rejection of desired signals against noise such as with regard to FM radio stations. However, such has no relation to applicants present invention. Fabian et al disclosed a scheme which employs carrier-like modulation, which is common and unrelated to that of the present invention. That is, Fabian et al modulate a narrow-band carrier onto a frequency range of operation across human flesh, the range of operation being from the megahertz to the gigahertz. For example, the method of modulation at 1 Hz with regard to a high frequency apparatus to propagate a signal through "capacitive coupling through human flesh", as is performed by Fabian et al, is clearly unrelated to applicants claimed disclosure. Fabian et al's scheme specifically calls for capacitive coupling (Fig. 1 in Fabian et al depicts capacitance coupling between the marker and detector such as with regard to the scheme taught in Fig. 2 thereof, etc.). Fabian et al also notes that at high frequencies such as above 1 Ghz or, for that matter, at some low frequency, signal transfer is not effective. However, the present inventors are relying on their scheme working at low frequencies because of their cost effective use of magnetic coupling for effecting excitation of the tag element and for signal propagation.

Even though the Examiner refers to the modulating of a wideband signal by Fabian et al, Fabian et al's disclosure, it is submitted, calls for modulating a narrowband signal. That is even though Fabian et al's scheme is associated with a wide frequency range, it is still not a wideband signal, rather, it is a narrow

band carrier. In accordance with the present invention, when the inventors refer to a wideband signal, such as in connection with a transmitter, this is to be considered synonymous with a transmitter that is not tuned to a resonant frequency, referred to in the Specification as an "untuned transmitter" (see page 12, paragraphs [0042], [0043], etc.).

The present inventors refer to "wideband" when they talk about differentiating from art in a traditional or classical RFID. Fabian et al, it is submitted, did not employ traditional RFID methods; they relied upon capacitive coupling schemes, which, it is submitted, are clearly non-analogous to the present invention. Traditional RFIDs (which use narrow bandwidth) use a center frequency carrier that must be within 3% of the center frequency due to the fact that the transmitter/receiver is tuned to couple energy at the center frequency. This is extensively discussed in the Specification. The present invention, on the other hand, employs, for example, a transmitter that need not be tuned very well, although it can actually determine the nature of energy coupling between the transmitter and the tag because of the way the digital pulsing scheme of the wideband signal is implemented. The new pulsing scheme in accordance with the present claimed subject matter, it is submitted, is a clear patentable improvement over the inventor's prior, above-name patent and, certainly, could not have been realized even when considered in light of Fabian et al's teachings.

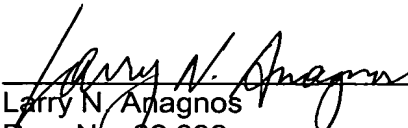
Digitization and coordinate positioning in connection with known schemes use various board based and planar technologies. However, the inventor's approach is to create a portable "wand-like" instrument based on "wideband" RFID three-dimensionally, for example, by using three antennas combinedly to effect a sufficiently strong discernable response. Such would have been

considered, for all practical purposes, impossible using the traditional RFID since it can be assumed from earlier technology that the transmitting cycles from one antenna would potentially undesirably excite the other antennas present thereby leading to noise signals and reduced performance. Such a scheme as that presently called for which employs, combinedly, three antennas closely coupled, e.g., into an effective spherical shape (see Figs. 3B), which can operate effectively, could not have been achievable in a manner as that alleged by the Examiner. For these and other reasons, the invention as called for in claims 1+, 18+ and 25+, as now amended, could not have been achievable in the manner as that alleged in the "Written Opinion" of the ISR.

Formal entry of this Preliminary Amendment and favorable action therefor of the claims, as currently amended, is respectfully requested.

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Respectfully submitted,
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